

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN NO. 10/540,021

AMENDMENTS TO THE DRAWINGS

Please enter the attached replacement formal drawing sheet 1/6 in which Fig. 1 has been labeled as "PRIOR ART" in accordance with the Examiner's requirement.

Attachment: Replacement Sheet - 1/6

REMARKS

Status of the Claims

Claims 17 and 18 have been canceled, and new claims 19 and 20 have been added. Thus, claims 1-16, 19 and 20 are pending before the Examiner.

Information Disclosure Statement

Apparently the Examiner did not receive from the International Office (WIPO) the references cited in the International Search Report. Thus, Applicant submits herewith copies of the references and a fresh Form PTO/SB/08 A & B listing the cited references, and requests the Examiner now to consider these references and to return an initialed copy of said Form.

Claim Objections

It is believed that the above amendments overcome the Examiner's objection to claims 10-18 under 37 C.F.R. § 1.75(c), by removing the reference to method claim 1 from apparatus claim 10 and including in the apparatus claims clear apparatus limitations, such as a single or several NaI and/or CdTe detectors with several different energy window discriminators.

Claim Rejections - 35 U.S.C. § 112

Insofar as the Examiner's rejection under 35 U.S.C. § 112, first paragraph, means that, claims 1 and 2 are not enabled by Applicant's written description, Applicant respectfully

traverses the rejection, and reminds the Examiner that there is a difference between an "incomplete" claim and a broad claim. In any event, and in an attempt to meet the Examiner's requirement that additional "essential" elements be recited in these claims, Applicant has amended claim 1 to recite "the essential devices", namely "a single, or a plurality of, NaI and/or CdTe detector(s) with several energy window discriminator(s)".

Claim Rejections - 35 U.S.C. § 103

Applicant respectfully traverses the rejection of claims 1-6, 8-15, 17 and 18 under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Schoenig '467, and the rejection of claims 7 and 16 under 35 U.S.C. § 103 as being unpatentable (obvious) over Schoenig '467 further in view of "admissions by Applicant alone, or additionally Chen '507, insofar as these rejections may be applied to the now pending amended claims 1-16, 19 and 20.

As the Examiner accurately pointed out in paragraph 9 of the Office Action, Schoenig discloses a system, for non-destructively testing nuclear fuel rods, comprising multiple detector devices for quality control of multiple rod attributes, and means for conveying the nuclear fuel rods at uniform speed. These detector devices comprise the following:

- An optical reader (14) for identifying rods by engraved serial numbers,
- An annular NaI detector (30) for measuring the gamma ray emission resulting from the natural decay of elements in the fuel material,
- A multi-detector gamma densitometer (32) including a collimated gamma source (e.g. ¹³⁷Cs) and plastic scintillation detector, and

- An active scanner (38) including a collimated neutron source (e.g., ^{252}Cf) and plastic scintillation detector.

These detector devices are aligned in the path of the moving rod and operate concurrently.

However, the method of the currently amended claim 1 and the apparatus of currently amended claim 10 differ from Schoenig in that the plutonium content is measured and the rod simultaneously checked for rogue pellets through scanning of the native gamma radiation emitted by the plutonium and americium contained in the pellets. As the fuel rods of Schoenig should not contain significant amounts of either artificial element, this claimed step could not have been disclosed or even suggested in Schoenig.

Even assuming, *arguendo*, that it would have been obvious for the skilled artisan (according to the Examiner) to adapt the device and method of Schoenig et al. to MOX fuel rods by measuring the plutonium content, eventually through scanning with the annular NaI detector (30) the gamma ray emission resulting from the natural decay of the plutonium in the fuel material itself, it is a surprising discovery of the joint inventors that simultaneously scanning the native gamma radiation of the trace amounts of americium present in MOX fuel also contributes to checking the presence of rogue pellets.

Moreover, the use of several different energy window discriminators allows a simplified spectroscopic analysis of the gamma radiation emitted by the pellets, providing a particularly simple means of identifying the gamma radiation emitted by each of the plutonium and americium isotopes present in the fuel rod.

Applicant therefore respectfully submits that the subject-matter of independent claims 1 and 10, and of the dependent claims, would not have been obvious from Schoenig's disclosure.

In other words, since Schoenig does not disclose all of the limitations of the independent claims 1 and 10, it is clear that Schoenig is incapable of rendering *prima facie* obvious the subject matter of each of these claims. Furthermore, in view of the above amended claims and the above arguments, it is clear that the Examiner's conclusory statements of obviousness and motivation do not apply to the amended independent claims 1 and 10.

In view of the above-explained deficiencies of Schoenig's disclosure relative to the independent claims 1 and 10, and even assuming, *arguendo*, the accuracy of the Examiner's statement of the "admissions by Applicant alone, or additionally Chen '507" in regard to claims 7 and 16, even if one were "to modify the system taught by Schoenig...to include a conventional output detector", there would not be produced the subject matter of any of Applicant's pending claims 1-16, 19 and 20, in particular claims 7 and 16. Furthermore, there would not have been any reason or motivation to combine Schoenig with the teachings of Chen which concerns a sealed tube neutron generator and does not bear any relation to the problem addressed by the subject-matter of original claims 7 and 16, namely the detection of external contamination on MOX fuel rods.

Thus, Applicant respectfully requests the Examiner to reconsider and withdraw the two rejections under 35 U.S.C. § 103(a), and to find the application to be in condition for allowance with all of claims 1-16, 19 and 20; however, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to **call**

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the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

With respect to the Examiner's comment in the middle of page 6 of the Office Action, Applicant respectfully submits that the instant specification is enabling, in and of itself, for constructing the claimed detector device, and that a skilled artisan would understand how to build the apparatus of claims 10-16 and 20 and to perform the method of claims 1-9 and 19 with the instructions contained therein.

Filed concurrently herewith is a Petition (with fee) for an Extension of Time of one month. Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this application, and any required fee for such extension is to be charged to Deposit Account No. 19-4880. The Commissioner is also authorized to charge any additional fees under 37 C.F.R. § 1.16 and/or § 1.17 necessary to keep this application pending in the Patent and Trademark Office or credit any overpayment to said Deposit Account No. 19-4880.

Respectfully submitted,

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